



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,967	09/25/2006	Nicolas Nadaud	293259US0PCT	6539
22850 7590 07/19/2010 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER COLEMAN, RYAN L				
ART UNIT 1714		PAPER NUMBER		
NOTIFICATION DATE 07/19/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/586,967

Applicant(s)

NADAUD ET AL.

Examiner

RYAN COLEMAN

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 11-19 and 24-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 20-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's amendments filed May 3, 2010 are acknowledged. Claims 1-29 are pending, and claims 11-19 and 24-29 have been withdrawn from consideration.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-10 and 20-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 has been amended to specify that a plasma is generated from a gas mixture comprising predominantly oxygen but substantially no argon. The specification does not support this amendment. Applicant's specification discusses the disadvantages of using argon as a carrier gas in a sputtering method that uses a linear ion source (Page 4, line 8 to Page 5, line 3) and the specification discusses how oxygen advantageously has a lower sputtering efficiency than argon (Page 10, 16-20 and Page 11, 6-25). However, the specification never specifically teaches generating a plasma from a gas mixture comprising predominantly oxygen but substantially no argon.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-3, 5-7, 9, 10, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0077402 by Amann et al. (hereafter referred to as "Amann").
8. With regard to claims 1 and 20, Amann teaches a method for the continuous vacuum cleaning of a substrate (Par. 0009, 0025, 0038, and 0048). Amann's method involves generating a plasma from a gas mixture comprising reactive gas and noble gas using a linear ion source that generates a collimated beam of ions (0029, 0038, and 0048; claims 1 and 19). Amann teaches subjecting a surface of the treated substrate to the plasma to remove, by chemical reaction, undesired carbon-based material from the surface of the substrate (Par. 0038 and 0048; Claims 19-21). Amann does not teach that the plasma removes surface material from the surface of the substrate, and Amann does not teach that the mixture of reactive gas and noble gas contains argon.
9. In the embodiment discussed thus far, Amann does not teach that the mixture of reactive gas and noble gas contains oxygen.
10. Amann does teach that oxygen can advantageously be used as reactive gas for removing undesired, carbon-based material because the plasma-excited oxygen gas can react with such material and form gaseous byproducts such as carbon monoxide and carbon dioxide (Par. 0009; Claims 19-21).
11. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Amann by using oxygen as the reactive gas in the cleaning mixture of reactive gas and noble gas. The motivation for performing the modification was provided by Amann, who taught that oxygen can advantageously be

used as a reactive cleaning gas for removing carbon-based material because plasma-excited oxygen gas can react with such carbon-based material and form gaseous byproducts such as carbon monoxide and carbon dioxide.

12. The method of Amann, as developed thus far, does not teach that the cleaning gas mixture comprises predominantly oxygen.

13. Amann teaches that the concentration of oxygen in the mixture of oxygen and noble gas is a result-effective variable because Amann teaches that the plasma-excited oxygen reacts with the undesired, carbon-based material in order to produce gaseous byproducts (Par. 0009; Claims 19-21). Therefore, the concentration of oxygen in the mixture directly affects the amount of undesired, carbon-based material that can be removed from the surface.

14. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Amann by optimizing the concentration of oxygen within the mixture of oxygen and noble gas because, as taught by Amann, the concentration of the oxygen within the cleaning gas is a result-effective variable (MPEP 2144.05, *Optimization of Ranges*).

15. With regard to claims 2, 3, and 21, Amann teaches, without breaking vacuum, depositing a thin film onto the surface the substrate using magnetically enhanced cathode sputtering (Par. 0009, 0026, 0032, and 0042).

16. With regard to claim 5, Amann teaches having relative movement between the ion source and the substrate (Par. 0030).

17. With regard to claim 6, Amann teaches having the linear ion source positioned with respect to the substrate such that undesired, carbon-based material is removed from the surface; Amann does not teach that the ionized species from the ion source sputter away substrate material from the substrate (Par. 0038).

18. With regard to claim 7, Amann does not explicitly teach that the ion source is positioned within a plant of industrial size. However, it is well known in the art to use such deposition equipment in industrial plants (MPEP 2144.03, Official Notice), and it would have been obvious to one of ordinary skill in the art at the time of the invention to position the ion source within a plant of industrial size such that industrial tasks such as producing substrates with deposited layers could advantageously be performed.

19. With regard to claim 9, Amann teaches that the method is carried out within at least one chamber intended for depositing thin films by vacuum sputtering (Par. 0025, 0026, 0030, and 0038).

20. With regard to claim 10, since Amann teaches moving the targeted substrate beneath the linear ion source, two surface portions of the substrate are considered to be successively exposed to the linear ion source because as the substrate moves beneath the ion source, different surfaces of the substrate will be successively exposed to the plasma from the ion source.

21. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0077402 by Amann as applied to claim 2 above in view of U.S. Patent Application Publication No. 2004/0163945 by Hartig.

22. With regard to claim 4, Amann teaches using his method to treat glass substrates (Par. 0025).

23. Amann does not teach that a thin film is deposited onto a glass substrate with a chemical vapor deposition technique.

24. Hartig teaches forming thin films on glass substrates that are to be used in architectural structures such that the reflectivity and emissivity of the glass can be advantageously modified (Par. 0002 and 0003). Hartig teaches that forming such films with sputtering techniques is undesirable because the manufacturing process must be interrupted when a sputtering target needs to be replaced and the sputtering process can cause undesirable contamination to build up on the surfaces of the processing equipment (Par. 0004-0009). Hartig teaches that it is desirable to use plasma-enhanced chemical vapor deposition to form such thin films on glass substrates instead of using the undesirable technique of sputtering (Par. 0021, 0022, and 0041-0044).

25. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Amann by substituting the sputtering ion source used to form a thin layer on a glass substrate with a plasma-enhanced chemical vapor deposition system (MPEP 2143, Rationale B). The motivation for performing the modification was provided by Hartig, who taught that when depositing thin films onto glass substrates, plasma-enhanced chemical vapor deposition is the more desirable technique than sputtering because sputtering requires that the manufacturing process be interrupted whenever the sputtering target needs to be replaced.

26. Claims 8, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0077402 by Amann as applied to claim 1 above, and further in view of U.S. Patent Application Publication No. 2002/0117250 by Veerasamy.

27. With regard to claims 8, 22, and 23, Amann teaches using the ion beam source to generate a collimated beam of ions in order to remove undesired material from the surface of a glass substrate (Par. 0025, 0029, and 0048)

28. Amann does not specify the energy of the ions that are in the collimated beam.

29. Veerasamy teaches that when using a linear ion beam of ions to remove undesired material from a glass substrate, the energy of the ions is a result-effective variable because some energy values are more preferable than others (Par. 0050 and 0051).

30. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Amann by optimizing the energy of the ions in the ion beam that is used to remove undesired material from the glass substrate because, as taught by Veerasamy, the energy of such ions is a result-effective variable (MPEP 2144.05, *Optimization of Ranges*).

Response to Arguments

31. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

32. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

33. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

34. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **RYAN COLEMAN** whose telephone number is (571)270-7376. The examiner can normally be reached on Monday-Friday, 9-5.

35. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

36. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 1714

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RLC/

Ryan L. Coleman

Patent Examiner, Art Unit 1714

July 9, 2010

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1714